CLAIMS

1. A communication system comprising a transmitter and a receiver,

(a) the transmitter comprising:

a modulation unit which modulates data to be transferred;

5 a space-time coding unit which performs space-time coding on a signal originating from the modulation to acquire two signals;

a first transmission unit which receives one of the space-time coded two signals; and

a second transmission unit which receives an other one of the space-time coded two

10 signals;

each of the first transmission unit and the second transmission unit including:

a serial-parallel converting unit which performs serial-parallel conversion of a received signal;

an inverse Fourier transform unit which performs inverse Fourier transform on

15 signals originating from the serial-parallel conversion; and

a transmitting unit which transmits the inverse Fourier transformed signal to an antenna having a predetermined polarization polarity,

a polarization polarity of the antenna used by the first transmission unit (hereinafter "first transmit antenna") being orthogonal to a polarization polarity of the antenna used by

20 the second transmission unit (hereinafter "second transmit antenna"),

(b) the receiver including:

a first reception unit which receives and processes a signal transmitted from the transmitter;

a second reception unit which receives and processes a signal transmitted from the

25 transmitter;

a space-time decoding unit which performs space-time decoding on a signal originating from processing in the first reception unit and a signal originating from

processing in the second reception unit to acquire a single signal; and

a demodulation unit which demodulates the space-time decoded single signal to acquire transferred data,

each of the first reception unit and the second reception unit including:

a receiving unit which receives a signal transmitted from the transmitter at an antenna having a predetermined polarization polarity;

a Fourier transform unit which performs Fourier transform on the received signal; and

a parallel-serial converting unit which performs parallel-serial conversion on the Fourier transformed signals to acquire a signal as a processing result,

a polarization polarity of the antenna used by the first reception unit (hereinafter "first receive antenna") being orthogonal to a polarization polarity of the antenna used by the second reception unit (hereinafter "second receive antenna"),

(c) an inclination of the first receive antenna to the first transmit antenna being approximately equal to an inclination of the second receive antenna to the second transmit antenna.

2. The communication system according to 1, wherein an inclination of the first receive antenna to the second transmit antenna is approximately equal to an inclination of the second receive antenna to the first transmit antenna.

3. A transmitter in the communication system as set forth in claim 1 or 2.

4. A receiver in the communication system as set forth in claim 1 or 2.

5. A transmitting method comprising:

a modulation step which modulates data to be transferred;

a space-time coding step which performs space-time coding on a signal originating from the modulation to acquire two signals;

a first transmission step which receives one of the space-time coded two signals; and

5   a second transmission step which receives an other one of the space-time coded two signals;

each of the first transmission step and the second transmission step including:

a serial-parallel converting step which performs serial-parallel conversion of a received signal;

10   an inverse Fourier transform step which performs inverse Fourier transform on signals originating from the serial-parallel conversion; and

a transmitting step which transmits the inverse Fourier transformed signal to an antenna having a predetermined polarization polarity,

a polarization polarity of the antenna used by the first transmission step (hereinafter

15   "first transmit antenna") being orthogonal to a polarization polarity of the antenna used by the second transmission step (hereinafter "second transmit antenna").

6. The transmitting method according to 5, wherein transmission to a receiver which performs reception using two antennas whose polarization polarities are orthogonal

20   to each other (hereinafter one of which is called "first receive antenna" and the other one is called "second receive antenna") is done, and

an inclination of the first receive antenna to the first transmit antenna is approximately equal to an inclination of the second receive antenna to the second transmit antenna.

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7. The transmitting method according to 6, wherein an inclination of the first receive antenna to the second transmit antenna is approximately equal to an inclination of

the second receive antenna to the first transmit antenna.

8. A receiving method comprising:

a first reception step which receives and processes a signal transmitted from the

5   transmitter;

a second reception step which receives and processes a signal transmitted from the

transmitter;

a space-time decoding step which performs space-time decoding on a signal

originating from processing in the first reception step and a signal originating from

10   processing in the second reception step to acquire a single signal; and

a demodulation step which demodulates the space-time decoded single signal to

acquire transferred data,

each of the first reception step and the second reception step including:

a receiving step which receives a signal transmitted from the transmitter at an

15   antenna having a predetermined polarization polarity;

a Fourier transform step which performs Fourier transform on the received signal;

and

a parallel-serial converting step which performs parallel-serial conversion on the

Fourier transformed signals to acquire a signal as a processing result,

20   a polarization polarity of the antenna used by the first reception unit (hereinafter

"first receive antenna") being orthogonal to a polarization polarity of the antenna used by

the second reception unit (hereinafter "second receive antenna").

9. The receiving method according to 8, wherein reception from a transmitter

25   which performs transmission using two antennas whose polarization polarities are

orthogonal to each other (hereinafter one of which is called "first receive antenna" and the

other one is called "second receive antenna") is done, and

an inclination of the first receive antenna to the first transmit antenna is approximately equal to an inclination of the second receive antenna to the second transmit antenna.

5   10. The receiving method according to 9, wherein an inclination of the first receive antenna to the second transmit antenna is approximately equal to an inclination of the second receive antenna to the first transmit antenna.

         11. A program which allows a computer to function as the transmitter in the

10   communication system as set forth in claim 1 or 2.

         12. A program which allows a computer to function as the receiver in the communication system as set forth in claim 1 or 2.